Understanding stem cell biology

Genetic Factors Found to Speed Embryonic Stem Cell Division

CIRM authors: Yangming Wang, Robert Blelloch

Researchers at UC, San Francisco developed a novel way of finding out the role of DNA-relatives called microRNA. These molecules are known to turn genes on and off and appear to regulate whether embryonic stem cells remain as stem cells or develop into mature cell types, but learning which genes are controlled by each microRNA has been a challenge. Using this screen, the researchers found 14 microRNAs that speed up cell division; of those, five are commonly found in human embryonic stem cells. It turns out these microRNAs deactivate genes that slow the cell cycle, essentially releasing the brakes on cell division. Identifying the role of these and other microRNAs could help researchers understand how to hold embryonic stem cells in their immature state, guide how those cells mature, or even develop treatments for cancer.

Related Information: Nature Genetics paper, Press release, UCSF Institute for Regeneration Medicine, Funding grant summary, Blelloch bio

See all research summaries